What is involved in moving electric transmission lines underground?

BACKGROUND: "Undergrounding" refers to the replacement of overhead cables providing electrical power or telecommunications with underground cables. The conversion of existing overhead electric distribution systems to underground is costly, and these costs are often far in excess of the quantifiable benefits, except in rare cases where the overhead cables are particularly vulnerable or undergrounding has a higher than average impact on other community goals.

The expense of undergrounding the electric service provides little aesthetic improvement without the additional expense to convert third-party utilities such as telephone and cable television to underground. The costs necessary to relocate all remaining utilities underground is estimated at somewhere between 10% and 50% beyond the cost of the electric conversion.

Benefits that are provided by undergrounding:

-Improved aesthetics
-Lower storm damage and restoration cost
-Reduced live-wire contact
-Fewer momentary interruptions
-Fewer structures impacting sidewalks
-Lower tree trimming cost
-Fewer motor vehicle accidents
-Fewer outages during normal weather
-Improved utility relations regarding tree trimming

Disadvantages of undergrounding:

-High initial cost ($1.1M to $23.0M per mile)
-Potential environmental damage
-Longer duration interruptions and more customers impacted per outage
-Susceptibility to flooding, storm surges and damage during post-storm cleanup
-Utility employee work hazards during vault and manhole inspections
-Increased exposure to dig-ins (i.e., accidental cuts during third-party construction)
-Reduced flexibility for both operations and system expansion
-Reduced life expectancy
-Higher maintenance and operating costs
-Higher cost for new data bandwidth

Sources: A number of studies and resources were consulted for this paper. In addition to the American Public Power Association, the conclusions of two studies were cited here: Undergrounding Assessment Phase 1 Final report: Literature Review and Analysis Electric Distribution Overhead to Underground Conversion performed by InfraSource Technologies in 2007 for the Florida Electric Utilities; Edison Electric Institute study entitled: Out of Sight, Out of Mind Revisited An Updated Study on the Undergrounding Of Overhead Power Lines-2009.

QUESTIONS: If you have further questions about undergrounding, please contact the BPW General Manager, Darrin Gordon: 302-645-6228 or go to: www.lewesbpw.delaware.gov

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